



10856 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Cycle: 15, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets</i>	<i>Configurations</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	ANY (1) SBS0335-052E1	ACS/WFC NIC2	1	08-May-2006 21:28:57.0	yes
02	ANY (2) SBS0335-052E2	ACS/WFC NIC2	1	08-May-2006 21:29:03.0	yes
03	ANY (3) SBS0335-052E3	ACS/WFC NIC2	1	08-May-2006 21:29:08.0	yes
04	ANY (4) SBS0335-052E4	ACS/WFC NIC2	1	08-May-2006 21:29:12.0	yes

Proposal 10856 - Overview

<i>Visit</i>	<i>Targets</i>	<i>Configurations</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
05	ANY (5) SBS0335-052E5	ACS/WFC NIC2	1	08-May-2006 21:29:16.0	yes
06	ANY (6) SBS0335-052E6	ACS/WFC NIC2	1	08-May-2006 21:29:20.0	yes
07	(7) SBS0335-052E7 ANY	ACS/WFC NIC2	1	08-May-2006 21:29:24.0	yes
08	(8) SBS0335-052E8 ANY	ACS/WFC NIC2	1	08-May-2006 21:29:28.0	yes

8 Total Orbits Used

ABSTRACT

The critical unanswered question in calculations of galaxy formation and evolution is the degree of feedback from the formation of the first massive stars on subsequent evolution. Even the sign of the term is uncertain. Super Star Clusters give one very dramatic answer by forming several thousand O stars in a volume with a radius of only a few parsecs. How can that many massive stars form in such a small volume without immediate dissipation of all gas by the intense ionizing radiation from the stars? SBS0335-052E has done this, not once but at least 6 times in a region of approximately 500 parsecs in size. It has also managed to do this with the third lowest metallicity of any known galaxy. The record lowest metallicity is held by its companion SBS0335-052W. These observations are designed to test one answer to this enigma; that all of the ionizing photons are absorbed within a few hundred AU of the stars that emit them. This delays the negative feedback from photoionization and allows the formation of other stars in the immediate neighborhood who are oblivious to the massive stars nearby. This scenario predicts that both molecular and ionized gas exist within the radius of the super star clusters and that their emission should be spatially coincident. We propose to test this hypothesis with high spatial resolution NICMOS camera 2 images in the hydrogen Pa alpha and molecular hydrogen (1-0) S(1) emission lines. Spatial coincidence of the emission regions will confirm that gas within the cluster is shielded from ionizing and dissociating photons and is capable of forming new stars within this tiny region in spite of the presence of thousands of massive stars. The current burst of star formation was probably triggered by interaction with the giant spiral galaxy NGC 1376. This proposal contains parallel observations of this galaxy with the ACS WFC. Due

to the intense interest in SBS0335-052 we waive all proprietary rights. The observations will then immediately compliment observations by the Great Observatories, Spitzer and ground base observatories .

OBSERVING DESCRIPTION

The proposal takes NICMOS narrow band images in Camera 2 of the Blue Compact Dwarf galaxy SBS0335-052. It also takes parallel images with the WFC of ACS in broad band filters. The program was assigned 8 primary and 8 parallel orbits.

The NICMOS Primary observations take 4 exposures in 4 different narrow band filters in each of the 8 orbits. The sampling sequences, NSAMP values and Filter cadence are the same for all 8 orbits. The strong Pa Alpha line will be in the first filter so it receives less time than the other filters. Note that the redshift of the object places the Pa Alpha line in the F190N filter rather than the F187N filter which observes rest frame Pa Alpha. To avoid rotating the individual images we have asked for the same orient for all exposures. The exposures are:

F190N SampSeq = Step32 NSAMP=17

F187N SampSeq = Step64 NSAMP=20

F212N SampSeq = Step64 NSAMP=20

F215N SampSeq = Step64 NSAMP=20

This is repeated in each of the 8 orbits

There is no dither pattern executed in an orbit. Overall dithering is accomplished by defining 8 different target positions, 1 for each orbit. It is understood that the dither positions will not be as accurate as in orbit dithering but the dithering is only to mitigate intrapixel sensitivity variations and does not need to be accurate.

ACS WFC parallel observations: The ACS WFC parallel observations are designed to image the galaxy NGC 1376 if it does not affect the scheduability of the NICMOS observations. The target galaxy is interacting with NGC 1376 and we want to see if there are signs of disturbed

Proposal 10856 - Overview

morphology due to the interaction. To image the galaxy the orient must be between 350 and 360 degrees. Information from the visit planner indicates that it is possible but that it limits the scheduability. We have put in the orientation limits of 350 to 360 degrees. If this causes a problem in scheduability the orient requirement can be dropped.

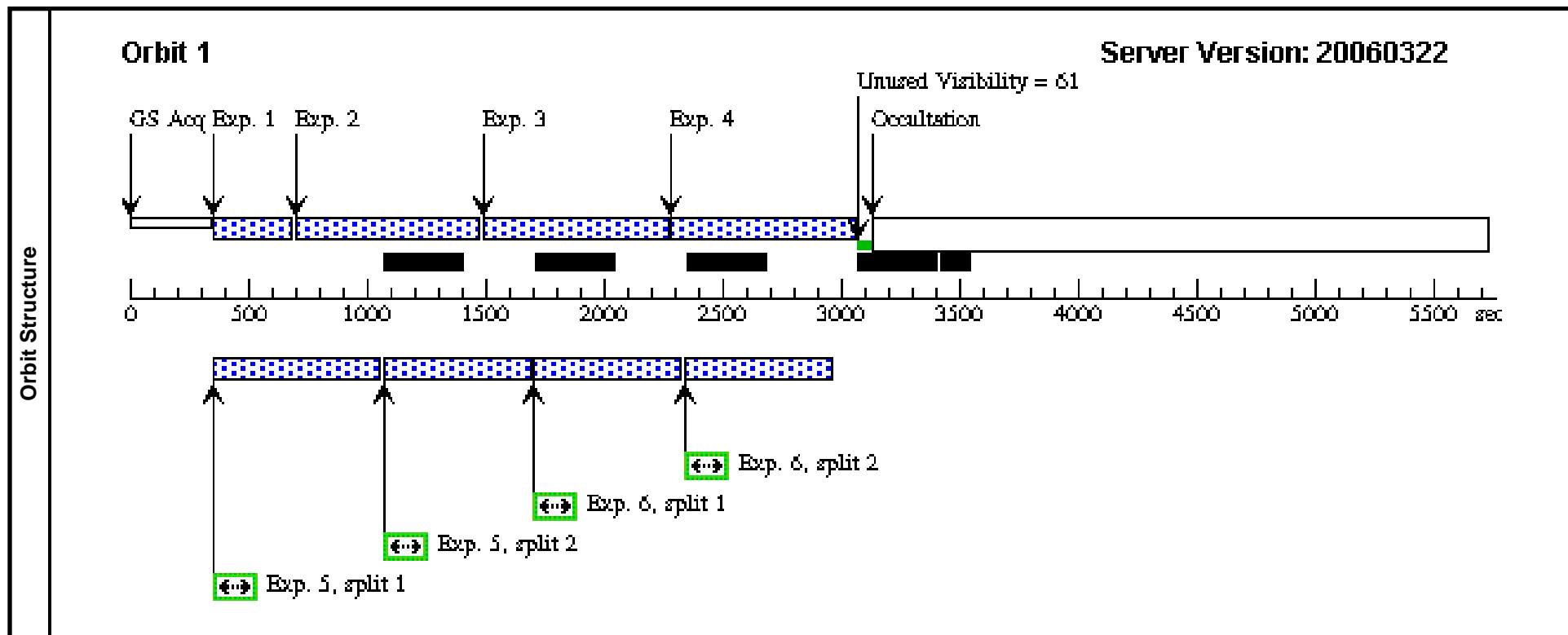
The ACS observations are

F435W ACS/WFC 2 1000 second exposures with CR split
F475W ACS/WFC 2 1000 second exposures with CR split
F555W ACS/WFC 2 1000 second exposures with CR split
F606W ACS/WFC 2 1000 second exposures with CR split
F625W ACS/WFC 2 1000 second exposures with CR split
F775W ACS/WFC 2 1000 second exposures with CR split
F814W ACS/WFC 2 1000 second exposures with CR split
F850LP ACS/WFC 2 1000 second exposures with CR split

Proposal 10856 - Visit 01 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:30 GMT 2006

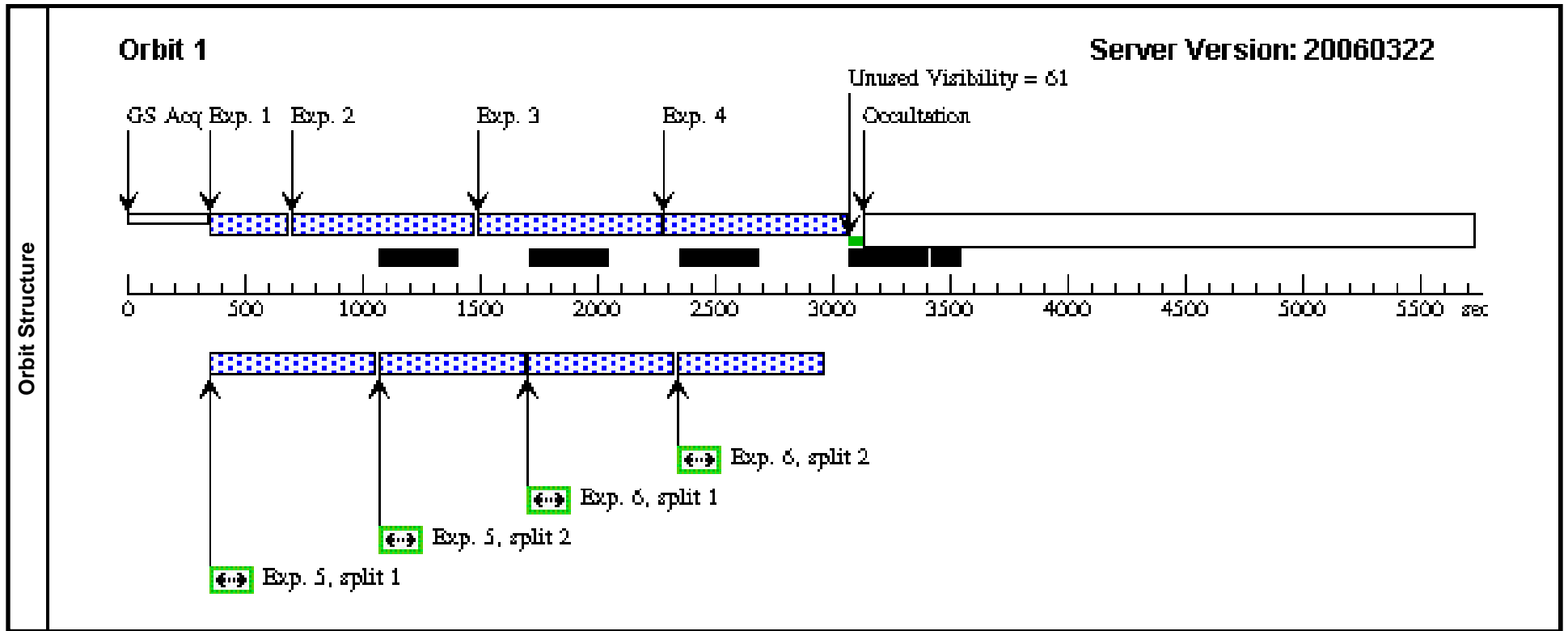
Visit	Proposal 10856, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: ORIENT 350.0D TO 360.0 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	SBS0335-052E1	RA: 03 37 43.9261 (54.4330254d) Dec: -05 02 38.51 (-5.04403d) Equinox: J2000		V=16.6+/-0.1	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2E	(1) SBS0335-052E1	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group 1-6	[==>]	[1]
	2	SBS0335-05 2E	(1) SBS0335-052E1	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	3	SBS0335-05 2E	(1) SBS0335-052E1	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	4	SBS0335-05 2E	(1) SBS0335-052E1	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	5	NGC 1376	ANY	ACS/WFC, ACCUM, WFC	F435W			Prime + Parallel Group 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F435W			Prime + Parallel Group 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 02 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:31 GMT 2006

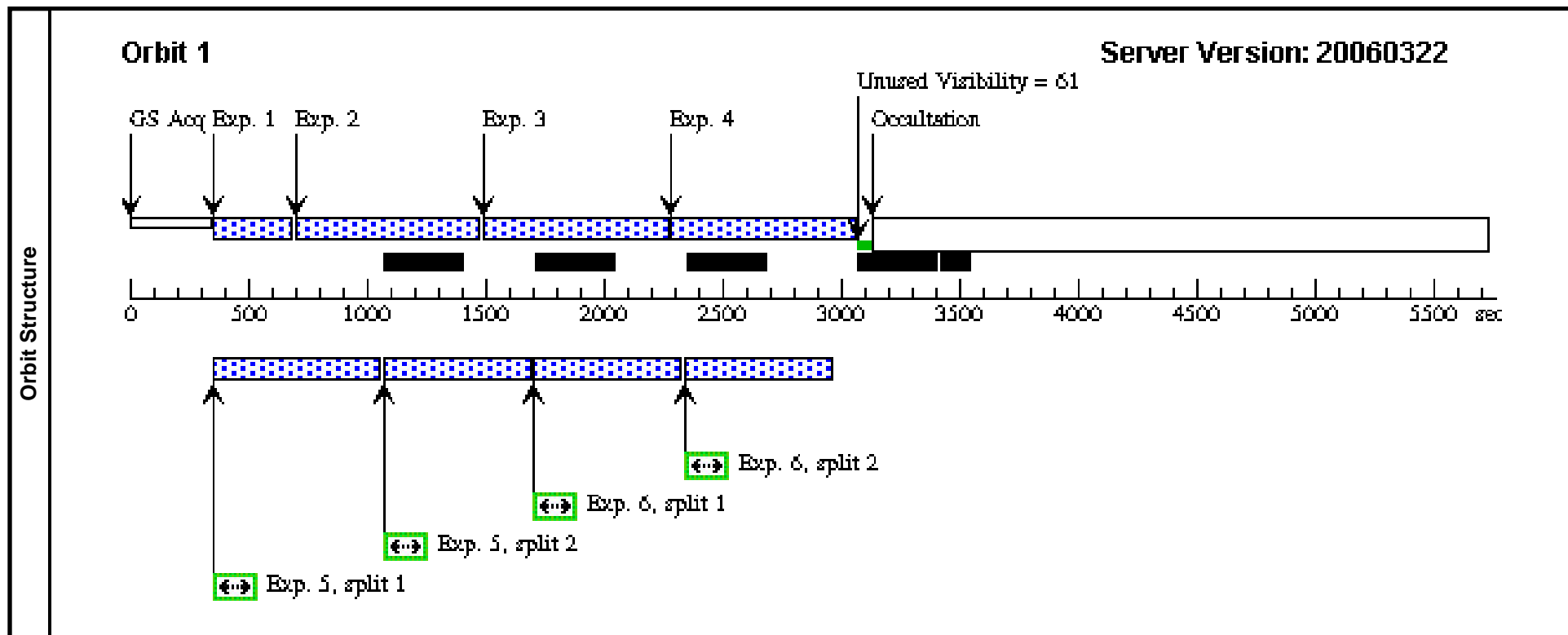
Visit	Proposal 10856, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	SBS0335-052E2	RA: 03 37 43.8930 (54.4328875d) Dec: -05 02 38.51 (-5.04403d) Equinox: J2000			V=16.6+/-0.1	Reference Frame: ICRS			
	<i>Comments: 2nd target position for SBS0335-052</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-052	(2) SBS0335-052E2	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group 1-6	[==>]	[1]
	2	SBS0335-052	(2) SBS0335-052E2	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	3	SBS0335-052	(2) SBS0335-052E2	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	4	SBS0335-052	(2) SBS0335-052E2	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F475W			Prime + Parallel Group 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F475W			Prime + Parallel Group 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 03 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:31 GMT 2006

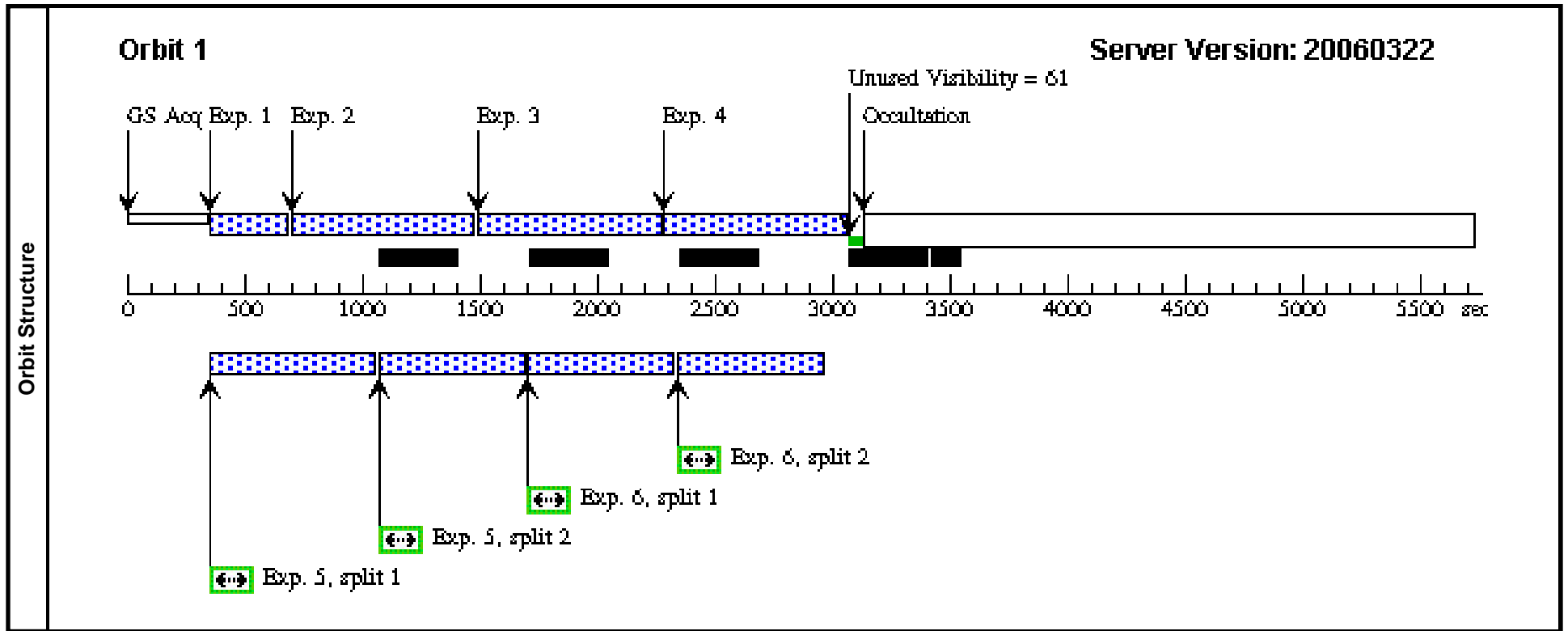
Visit	Proposal 10856, Visit 03 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	SBS0335-052E3	RA: 03 37 43.8930 (54.4328875d) Dec: -05 02 38.01 (-5.04389d) Equinox: J2000			V=16.0	Reference Frame: ICRS			
	<i>Comments: 3rd position for SBS0335-052</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(3) SBS0335-052E3	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(3) SBS0335-052E3	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS0335-05 2	(3) SBS0335-052E3	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(3) SBS0335-052E3	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F555W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F555W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 04 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:32 GMT 2006

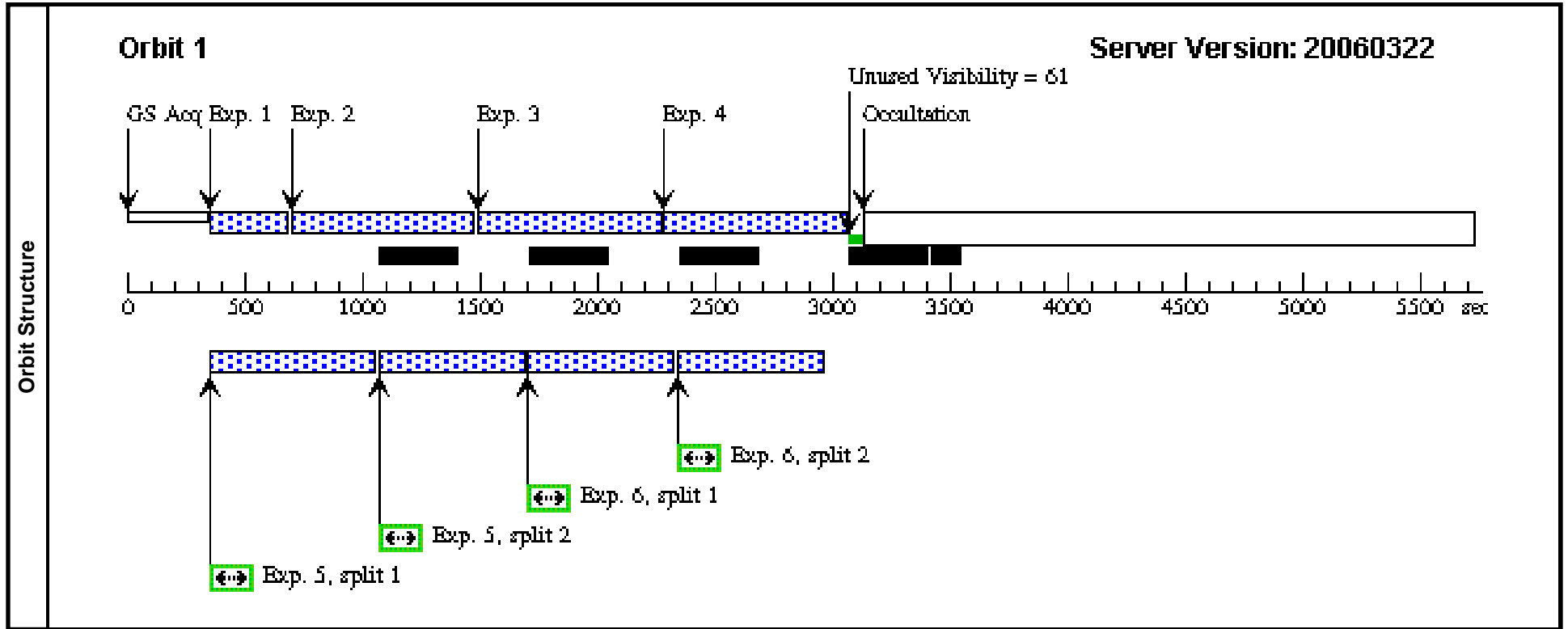
Visit	Proposal 10856, Visit 04 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(4)	SBS0335-052E4	RA: 03 37 43.9260 (54.4330250d) Dec: -05 02 38.01 (-5.04389d) Equinox: J2000			V=16.0	Reference Frame: ICRS	<i>Comments: 4th position for SBS0335-052</i>		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(4) SBS0335-052E4	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(4) SBS0335-052E4	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS0335-05 2	(4) SBS0335-052E4	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(4) SBS0335-052E4	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F606W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F606W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 05 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:32 GMT 2006

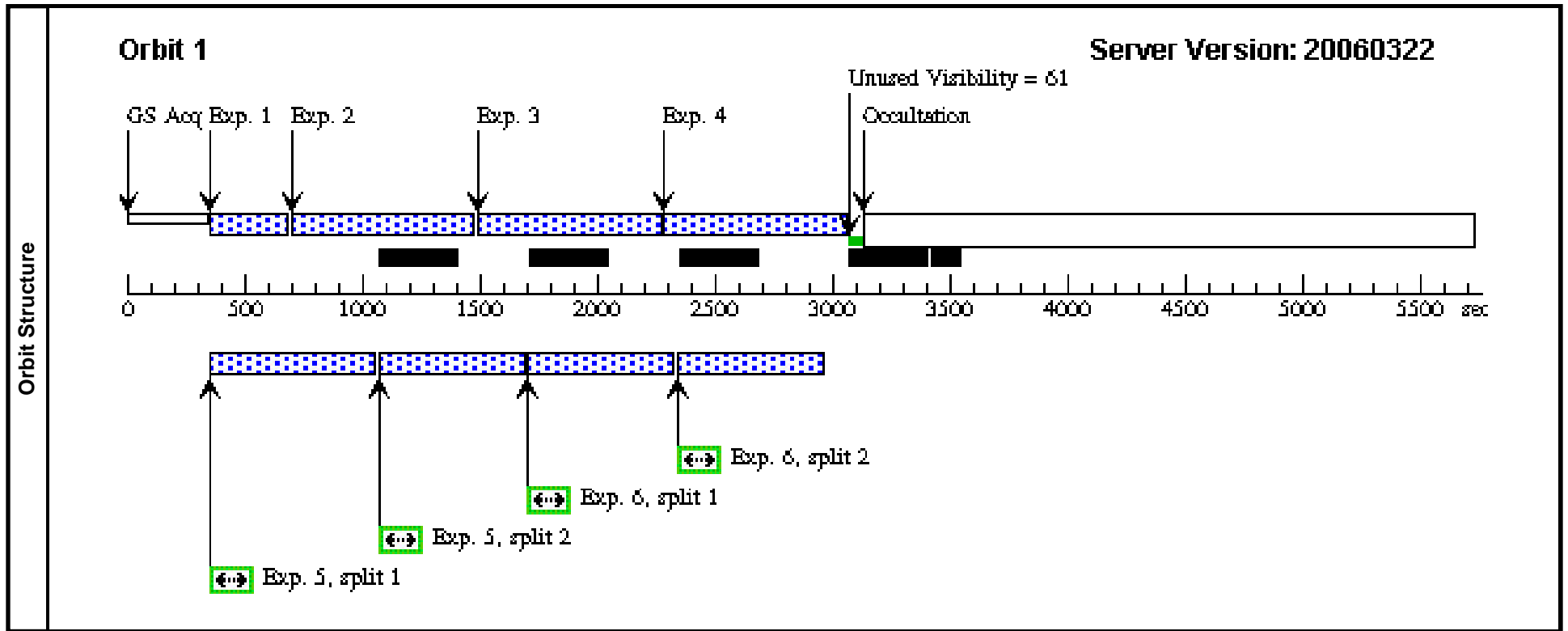
Visit	Proposal 10856, Visit 05 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	SBS0335-052E5	RA: 03 37 43.9590 (54.4331625d) Dec: -05 02 38.01 (-5.04389d) Equinox: J2000			V=16.0	Reference Frame: ICRS	<i>Comments: 5th position for SBS0335-052</i>		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(5) SBS0335-052E5	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(5) SBS0335-052E5	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS0335-05 2	(5) SBS0335-052E5	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(5) SBS0335-052E5	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F625W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F625W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 06 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:33 GMT 2006

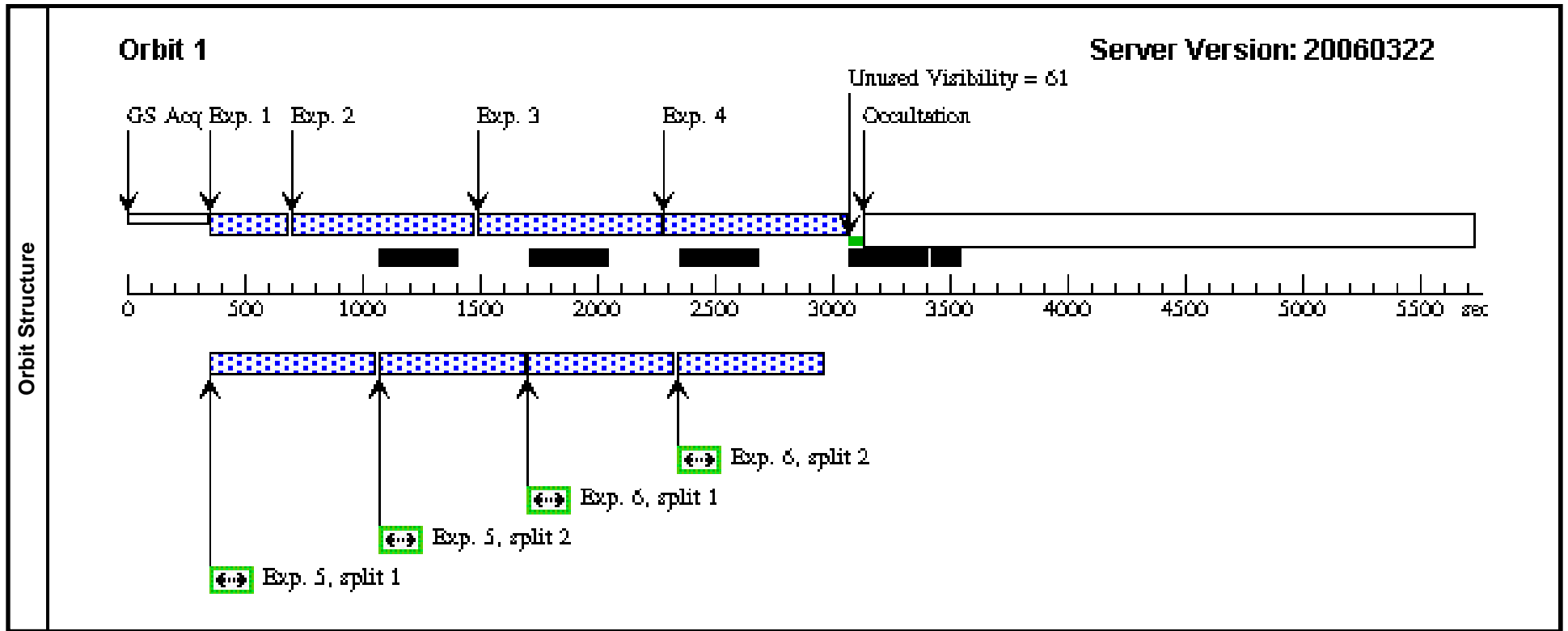
Visit	Proposal 10856, Visit 06 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(6)	SBS0335-052E6	RA: 03 37 43.9590 (54.4331625d) Dec: -05 02 38.51 (-5.04403d) Equinox: J2000		V=16.0	Reference Frame: ICRS				
	<i>Comments: 6th position for SBS0335-052</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(6) SBS0335-052E6	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(6) SBS0335-052E6	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS033500 52	(6) SBS0335-052E6	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(6) SBS0335-052E6	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F775W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F775W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 07 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:33 GMT 2006

Visit	Proposal 10856, Visit 07 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(7)	SBS0335-052E7	RA: 03 37 43.9590 (54.4331625d) Dec: -05 02 39.01 (-5.04417d) Equinox: J2000		V=16.0	Reference Frame: ICRS				
	<i>Comments: 7th position for SBS0335-052</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(7) SBS0335-052E7	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(7) SBS0335-052E7	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS0335-05 2	(7) SBS0335-052E7	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(7) SBS0335-052E7	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F814W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F814W			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 10856 - Visit 08 - Delayed Negative Feedback in the Super Star Clusters of SBS0335-052E

Tue May 09 01:29:34 GMT 2006

Visit	Proposal 10856, Visit 08 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC, NIC2 Special Requirements: SAME ORIENT AS 01									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(8)	SBS0335-052E8	RA: 03 37 43.9260 (54.4330250d) Dec: -05 02 39.01 (-5.04417d) Equinox: J2000		V=16.0	Reference Frame: ICRS				
	<i>Comments: 8th position for SBS0335-052</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SBS0335-05 2	(8) SBS0335-052E8	NIC2, MULTIACCUM, NIC2-FIX	F190N	SAMP-SEQ=STEP3 2; NSAMP=17		Prime + Parallel Group up 1-6	[==>]	[1]
	2	SBS0335-05 2	(8) SBS0335-052E8	NIC2, MULTIACCUM, NIC2-FIX	F212N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	3	SBS0335-05 2	(8) SBS0335-052E8	NIC2, MULTIACCUM, NIC2-FIX	F187N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	4	SBS0335-05 2	(8) SBS0335-052E8	NIC2, MULTIACCUM, NIC2-FIX	F215N	SAMP-SEQ=STEP6 4; NSAMP=20		Prime + Parallel Group up 1-6	[==>]	[1]
	5	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F850LP			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]
	6	NGC1376	ANY	ACS/WFC, ACCUM, WFC	F850LP			Prime + Parallel Group up 1-6	1000.0 Secs [==>(Split 1)] [==>(Split 2)]	[1]

